NON-PUBLIC?: N
ACCESSION #: 8810170272

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Surry Power Station Unit 2 PAGE 1 of 4

DOCKET NUMBER: 05000281

TITLE: Reactor Trip By Turbine trip Due To Inadequate Procedure, Faulty Valve Position Limiter Indication and Response
EVENT DATE: 09/10/88 LER #: 88-022-00 REPORT DATE: 10/10/88

OPERATING MODE: N POWER LEVEL: 004

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: D. L. Benson, Station Manager TELEPHONE: 804-357-3184

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE TO NPRDS:

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT:

On September 10, 1988 at 0158 hours, with the Unit 2 reactor at 4% power, during a shutdown for a refueling outage, a reactor trip by turbine trip occurred. The event occurred while operators were attempting to maintain the turbine at synchronous speed, with the generator output breakers open. When the valve position limiter was raised, per the procedure, an unexpectedly rapid opening of the turbine governor valves and a rapid increase in turbine first stage pressure occurred, resulting in a turbine trip/reactor trip. Operators followed appropriate plant procedures and quickly stabilized the plant following the trip.

The cause of the event has been attributed to a combination of an inadequate procedure, a faulty valve position limit indication, and an unexpectedly fast valve position limiter setting response. The controlling procedure used during the event will be revised to ensure that the turbine control system is placed in the configuration intended. Testing will be performed on the Electro Hydraulic Control (EHC) system, which will determine if any additional actions will

be required.

END OF ABSTRACT

1.0 Description of the Event

On September 10, 1988 at 0158 hours, with the Unit 2 reactor at 4% power, during a shutdown for a refueling outage, a reactor trip by turbine trip occurred. The event occurred while operators were attempting to maintain the turbine at synchronous speed, with the generator output breakers open, per the instructions of the operating procedure. The procedure directed the operator to raise the governor valve position limiter EIIS-ZC) to approximately 10%. This resulted in an unexpectedly rapid opening of the turbine governor valves EIIS-SCV) and consequently, a rapid increase in turbine first stage pressure to 21% Accordingly, a turbine trip occurred, due to a 2/2 generator output breakers open with turbine power greater than 15% turbine trip signal. Since the first stage turbine pressure had exceeded the 10% setpoint for permissive P-7, which enables the at power trips, the turbine trip immediately initiated a reactor trip. Following the trip, plant safety systems functioned as designed except that a greater than expected Reactor Coolant System (RCS)(EIIS-AB) cooldown was noted. A temperature of 539 degrees Fahrenheit was noted shortly after the trip versus the expected 547 degree Fahrenheit.

2.0 Safety Consequences and Implications

During this event, the turbine protection and reactor protection systems functioned as designed. In addition, plant safety systems remained operable and plant parameters remained well within the bounds of the accident analysis. Therefore, the health and safety of the public were not affected.

3.0 Cause

The cause of the event has been attributed to a combination of an inadequate procedure, a faulty valve position limit indication, and an unexpectedly fast post valve position limiter setting response. Prior to the step in the procedure, that directs the operator to raise the governor valve position limiter, the operator is instructed to verify the valve position limit light is out. This was verified, and the operator continued with the procedure. However, the preceding steps of

the procedure had not placed the turbine control system in a configuration that was intended, i.e., the governor valves fully closed, with no demand to open, and off of the limiter. With the valve position limit indication not operating properly, the operator was unaware that the governor valves were on the limiter. Therefore, when the limiter setting was increased, the governor valves opened rapidly resulting in a surge in first stage pressure and subsequent turbine trip/reactor trip. The surge was unexpectedly high due to the rapid response of the valve limiter.

The initial cooldown has been attributed to th steam dumps EIIS-TCV) being in manual control in the steam pressure mode at the time of the event. This resulted in continued steam flow, following the trip, until operators secured the dumps just prior to the 543 degrees Fahrenheit isolation.

The cause of the abnormally rapid increase in valve position limiter setting and faulty valve position limit indication has not been determined. However, an electro hydraulic controller EIIS-JJ) (EHC) checkout will be performed prior to completion of the current Unit 2 outage.

4.0 Immediate Corrective Action (s)

Operators followed appropriate plant procedures and quickly stabilized the unit following the reactor trip. Also, the shift technical advisor performed the critical safety function status tree review to ensure specific plant parameters were noted and that those parameters remained within safe bounds.

5.0 Additional Corrective Action (s)

Testing will be performed on the EHC system, which will determine if any additional corrective actions will be required.

6.0 Action(s) Taken to Prevent Recurrence

The controlling procedure used during the event, will be revised to ensure that the turbine control system is placed in the configuration intended.

7.0 Similar Events

None.

8.0 Manufacturer/Model Number

N/A.

ATTACHMENT # 1 TO ANO # 8810170272 PAGE 1 OF 1

VIRGINIA ELECTRIC AND POWER COMPANY
Surry Power Station
P. 0. Box 315
Surry, Virginia 23883

October 10, 1988

U.S. Nuclear Regulatory Commission Serial No.: 88-051
Document Control Desk Docket No.: 50-281
016 Phillips Building Licensee No.: DPR-37
Washington, D.C. 20555

Gentlemen:

Pursuant to Surry Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report for Surry Unit 2.

REPORT NUMBER

88-022-00

This report has been reviewed by the Station Nuclear Safety and Operating Committee and will be reviewed by Safety Evaluation and Control.

Very truly yours,

David L. Benson
Station Manager

Enclosure

cc: Dr. J. Nelson Grace
Regional Administrator
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101 Marietta Street, NW
Atlanta, Georgia 30323

ACCESSION #: 8810170282